

## **SPECIFICATION**

To Whom It May Concern:

Be It Known That I, **FRED D. OBERHAUS**, being citizens of the United States and residing in the City of Chesterfield, County of St. Louis, and State of Missouri, respectively; whose full post office address is 1808 Cayman Ct., Chesterfield, Missouri 63017, respectively, have invented new and useful improvements in

**COMPONENTRY ASSEMBLED FREE STANDING WIRE RACK**

### **CROSS REFERENCE TO REALTED APPLICATION**

This non-provisional patent application claims priority to the provisional patent application having Serial No.: 60/416,423, which was filed on October 7, 2002.

### **BACKGROUND OF THE INVENTION**

Numerous types of wire racks, and all types of shelving racks, are available in the prior art. These types of racks are used for storing of various types of goods. Most of these types of racks are generally supported upon the floor, some may be suspended, or others may be applied to a wall or other vertical surface, and generally disclose a plurality of integral shelving, for use for storing almost any goods, including tools, hardware, lumber, canned goods, and any of a variety of materials. In addition, there are numerous publications and embodiments for shelving that may be appended directly to the wall, wherein a support means, such as a bracket, will adhere the shelving directly to the wall, generally through the usage of some type of fastening, and then secures a series of cantilevered shelves off of the support means, to readily dispose a plurality of shelving for storage and suspension of a variety of goods, as previously alluded to.

It is, therefore, the improvement of the current invention to provide a uniquely designed component formed rack, generally constructed of wire materials, and can be immediately assembled from its flattened and storage condition into an erected shelving, for resting upon the floor, ground, or the like, and be readily stable for supporting a variety of the type of items and other household goods as previously referred to herein.

### **SUMMARY OF THE INVENTION**

This invention related generally to a storage rack, assembled from a variety of wire formed components, which when assembled, and braced together, affords a series of shelving readily disposed for accepting any of a variety of goods for storage and resting thereon, in preparation for usage. This invention contemplates the formation of a wire rack, that includes one or more shelving, usually fabricated from metal wire, and which is integrated together by means of pressure fit, fasteners, or the like, into a unified structure, when erected, wherein a series of shelves connect by pressure fit into end frames, to form a storage type of multi-shelved rack. Various rods are spanned across the back of the rack, in order to provide stability, and to sustain the erection of the rack, once the shelving has been applied thereto.

The rack includes a series of end frames, generally formed having at least a pair of vertical support rods, and further includes a variety of transverse support rods, and onto which the shelving is located, as the rack is being assembled. Each of the end frames may have an upper integral or connected cross rod, to add stability to each end frame, when erected, and to also function as a handle, when the rack is shifted from one place to another. In addition, the bottom of each vertical support rod may include a cap, or other foot, in the assembled structure.

Each of the shelving includes a series of longitudinal rods, and further includes a series of shelf forming rods, that are soldered, welded, or otherwise secured to the longitudinal rods when forming each individual shelf. In addition, each shelf includes a lower longitudinal rod, at both the front and back of the shelves, with the shelf forming rods being bent downwardly, at both their front and back edges, and soldered or welded into place with the lower longitudinal rods, to add structural support and strength to each shelving, at the front and

back locations, and to afford further structural strength to the shelf, as when laden with stored goods or material.

The back of each of the end frames includes a connecting means therewith, and to which a diagonal brace may connect, in order to add to the structural strength and erectness of the end frames, supporting their shelves, when the rack is assembled.

It is significant that all of the various components as defined herein, when the rack is disassembled, or initially fabricated, can be layered into a generally flattened configuration, for storage, shipment, or when displayed for sale, at the retail level. But, when purchased by a consumer, the rack can be assembled, erected, into a multi-shelved wire rack, for immediate usage, in a minimum of time and effort.

It is, therefore, the principal object of this invention to provide shelving, supported by end frames, and which may be rested upon the floor or other surface, but yet have full stability to furnish instant storage for items located thereon.

Another object of this invention is to provide a supporting shelf, formed into a rack, wherein the shelving is pressure fitted within its various end frames, in order to initially provide structural support for the erected rack, when assembled.

Still another object of this invention is to provide the fabrication of a supporting shelf that may be formed into a multi-shelved rack, for support upon the floor.

Another object is to provide shelving, which may be stored in a flattened condition, to facilitate its storage, transfer, or display in the marketplace.

Yet another object of this invention is to provide a supporting shelf which may be applied on the floor, and held into position by means of various components, such as end frames, as when assembled at the site of usage,

simply by holding the end frames in a vertical position and applying the shelving in a pressure fit thereto.

Still another object of this invention is to provide a portable type of shelving that may be instantly and quickly assembled into a multi-shelved rack, held together by back bracing, into a very secure and stably erected rack.

Other objects may become more apparent to those skilled in the art upon reviewing the description of the preferred embodiment provided herein.

Other various components may be used in the structure of this storage rack, within the scope of the invention as defined herein, after a review of this summary of the invention, and when further considered in conjunction with the description of the preferred embodiment, in light of the drawings accompanying this disclosure.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 provides an isometric view of the storage rack of this invention, as erected;

Fig. 2 provides an isometric back view of the erected rack of this invention;

Fig. 3 is an exploded view of the rack showing one of the shelves being coupled with its respective end frames, during erecting of the storage rack;

Fig. 4 is a partial sectional view of the end relationship of the pressure fit of the end of a shelf into its end frame, when assembled;

Fig. 5 provides an isometric view of the further modified storage rack of this invention.

### **DESCRIPTION OF THE PREFERRED EMBODIMENT**

In referring to the drawings and in particular Fig. 1, the isometric view of the shown rack 1 is readily disclosed. The rack includes a series of end frames 2 and 3, and has a series of shelving 4 applied thereto, which in the preferred embodiment, undertakes a pressure fit within the end frames, when assembled. Actually, while only two of the shelving are shown in Fig. 1, obviously, since there are a series of lateral or cross bracings 5 associated with each end frame, as many shelves can be applied to the end frames, as there are cross rods or braces provided. Hence, for the end frames shown in Fig. 1, four shelves could be applied to the shown structure. Obviously, other quantities of cross rods could be applied; the height of the end frames could be increased, or decreased, to accommodate more or less of the shown shelving 4.

Also as can be seen, the vertical rods 6, and the back of vertical rod 7, for each end frame, are integrated together through the cross rods 5, in addition to the upper rod 8, which upper rod 8 may be integrally formed of the end frame, or held thereto by means of a series of connecting sleeves 9, as noted. Thus, when the cross rod 8 is integrally formed of the front and back vertical rods 6 and 7, the rod 8 may function as a handle, for movement of the rack, when assembled.

Also noted connecting with the back vertical rod 7, is a diagonal brace 10, which may have a coined end 11 at each end, so as to be secured to the rods 7 by means of any type of a fastener, or a nut and bolt combination, to secure the diagonal brace in place. In addition, a second diagonal brace extending in an opposite direction may connect between the coined fastening areas 12 formed of the back vertical rods 7, as can be noted. Thus, double stability can be provided through the use of pair of diagonal braces that cross each other at an approximate midpoint, to furnish very secure interconnection of the rack together, when assembled. In addition, it is likely that the diagonal braces 10

may be formed of two sections, as at 13 and 14, and interconnected together by means of a fastener 15, at their midpoint. Hence, the advantages of this type of a formation for the diagonal braces allows for the pair of diagonal braces, when they cross each other at the middle of the back of the erected rack, can all be held at their approximate midpoint, as shown at 15, by one fastener, to further add stability to the erected rack, as assembled.

Fig. 2 shows a back view of the component formed rack 1, and further discloses the relationship of the diagonal bracing, as can be noted. The second diagonal bracing will connect between the coined areas 12, as can be noted.

In the assembly of each of the shelves 4 to their respective end frames 2 references are made to the exploded view for the rack, during a stage of its assembly, as shown in the exploded view. When erected, each of the end frames 2 will be held substantially vertically, apart from each other at a space approximating the length of the shelving 4. At this time, each end of the shelves will be pressure fit within their respective end frames, and come to rest upon the proximate cross rods 5, as can be noted. All four of the shelving will be applied to the end frames 2, in this manner. In addition, as can be seen, the diagonal brace 10 formed of the shown rods 13 and 14 are connected together at their midpoint, by means of the fastener 15, and secured in place against the back vertical rods 7, by means of the fasteners 11, as can be noted.

The concept of pressure fitting the shelving within the end frames, for the purpose of adding initial stability and sustained support, for the rack, as erected, can be seen in Fig. 4. The vertical rods 6 and 7, for each end frame, extend upwardly, and the ends of each of the shelves 4 are pressure fit between the rods 6 and 7, as the shelving is forced downwardly into its mating pressure connection. Each of the shelving 4 is fabricated, at its approximate ends, having a pair of closely aligned shelf forming rods 16 and 17, having a space therebetween approximating the diameter of each of the vertical rods 6 and 7, so

as to provide clearance for the vertical rods to locate between the bent down ends of the shelf forming rods 16 and 17, to allow for that pressure engagement. Thus, this is all the interconnection needed to hold the shelving in place, and to provide a fully stabilized rack, when assembled, although obviously, other forms of fastening, such as clips, connectors, or the like, could supplementally be used for holding the shelves to their respective end frames, when assembled, if desired.

Each of the shelves, as can be noted, as in Fig. 3, includes a series of longitudinal rods 18, with a central longitudinal rod 19 provided intermediate of the shelving therein, to add stability at this location to each shelf. In addition, there are a series of lower longitudinal rods 20, arranged at the front and back edges of the formed shelf. In addition, there are a series of those shelf forming rods 21, which are spaced apart substantially symmetrically, along the length of each shelf, and welded to their various longitudinal rods, as can be noted. The shelf rods 21, at both their front and back edges, bend downwardly, as can be seen at 22, and weld to the lower longitudinal rods 20, to add further structural strength at these locations, to each shelf, in order to support any heavier type of items that may be stored thereon, during usage of the assembled rack.

Fig. 5 discloses the storage rack, in a slightly modified format, and an isometric view, disclosing a free standing wire rack of lesser with dimensions. As noted, it includes a series of shelving 25-27, but obviously, more or less number of shelves could be utilized, in the construction of this rack. In fact, the end frames 28 and 29 show various with a variety of cross bracings, as seen in 30, any one of these cross bracings as provided with in the end frames, on a leveled condition, are capable of holding one of the shelving, as in 25, within the assembly of the standing wire rack.



In addition to the forgoing, and while the shelving 25-27, or even the shelving 4 as previously described, are shown as being configured of wire components, obviously, some segment of the shelving surface could be fabricated from other materials such as wood, plastic, or the like and still function in the manner of shelving for constructing the free standing wire rack of this invention, for usage.

Once again, the shelving 25, etc, is designed having just a slightly greater dimension than the width between the legs, as in 31 and 32, of each end rack, in order to provide for the pressured fit of the shelving within their end frames, when forming or stabilized rack, during assembly. In addition, the upper ends of the end frames, 33, include a cross rail as in 34, and which are designed for use as handles, or the like. Or, it could be that these upper portions may terminate in an upper tip for the rods 31 and 32, similar to that as previously shown and described to the end frames having connecting sleeves 9, as previously shown in fig. 1, so that a series of these types of racks could be stacked, one upon the other, rather than incorporating a upper rod 8, or 34 as explained herein. Thus, these wire racks could be stacked ceiling high, one upon the other, through the use of connecting sleeves 9.

Variations or modifications to the subject matter of this invention may occur to those skilled in the art upon reviewing the summary and description of the invention as provided herein. Such variations or modifications, if within the spirit of this invention, are intended to be encompassed within the scope of the principle of this development as explained herein. The description and the disclosure of the preferred embodiment are provided herein for illustrative purposes only.